

Amendments to the Claims:

1. (Currently Amended) A method of analyzing video frames capturing a 3D scene over time to automatically generate a road map of the 3D scene comprising:

detecting positions of objects in the video frames;

estimating 3D transformation parameters for the objects;

predicting heights of the objects based at least in part on the 3D transformation parameters;

removing outliers from the predicted heights of objects to produce a filtered set of objects;

using the filtered set of objects to repeat estimating the 3D transformation parameters and to repeat predicting the heights of the objects;

estimating road boundaries of the 3D scene using a background image and the positions of the objects;

~~and~~

~~estimating road boundaries of the 3D scene using the object positions to generate~~
generating the road map;

removing outlier pixels from the road map; and

estimating a height map for objects moving on a road of the road map.

2. – 3. (Canceled)

4. (Original) The method of claim 1, wherein detecting positions of objects comprises applying a foreground object detection process to the video frames.

5. (Canceled)

6. (Original) The method of claim 1, wherein estimating road boundaries comprises applying a region growing process to object positions to find pixels of the video frames belonging to a road surface in the 3D scene.

7. (Currently Amended) An article comprising: a ~~machine-accessible~~ tangible computer-readable storage medium containing instructions, which when executed, result in analyzing video frames capturing a 3D scene over time to automatically generate a road map of the 3D scene by

- detecting positions of objects in the video frames;
- estimating 3D transformation parameters for the objects;
- predicting heights of the objects based at least in part on the 3D transformation parameters;
- removing outliers from the predicted heights of objects to produce a filtered set of objects;
- using the filtered set of objects to repeat estimating the 3D transformation parameters and to repeat predicting the heights of the objects;
- estimating road boundaries of the 3D scene using a background image and the positions of the objects;
- and
- ~~estimating road boundaries of the 3D scene using the object positions to generate~~ generating the road map;
- removing outlier pixels from the road map; and
- estimating a height map for objects moving on a road of the road map.

8. – 9. (Canceled).

10. (Original) The article of claim 7, wherein instructions for detecting positions of objects comprises instructions for applying a foreground object detection process to the video frames.

11. (Canceled).

12. (Original) The article of claim 7, wherein instructions for estimating road boundaries comprises instructions for applying a region growing process to object positions to find pixels of the video frames belonging to a road surface in the 3D scene.

13. (Currently Amended) A system comprising:

a foreground object detection unit to analyze video frames of a 3D scene and detect objects and object positions in the video frames;

an object scale prediction unit to estimate 3D transformation parameters for the objects, ~~and~~ to predict heights of the objects based at least in part on the 3D transformation parameters, to remove outliers from the predicted heights of objects to produce a filtered set of objects, and to use the filtered set of objects to repeat estimating the 3D transformation parameters and to repeat predicting the heights of the objects; and

a road map detection unit to generate the road map by estimating road boundaries of the 3D scene using the object positions and a background image, removing outlier pixels from the road map, and estimating a height map for objects moving on a road of the road map.

14. – 16. (Canceled).

17. (Currently Amended) The system of claim 13, wherein the road map ~~estimation~~ detection unit estimates road boundaries by applying a region growing process to object positions to find pixels of the video frames belonging to a road surface in the 3D scene.

18. (New) The method of claim 1, wherein the objects comprise a representation of a human being in the video frames.

19. (New) The method of claim 1, wherein the estimating the road boundaries of the 3D scene comprises filling a uniform color region starting from a foot of a position of an object of the objects and stopping when an edge pixel of the background image is reached.

20. (New) The article of claim 7, wherein the objects comprise a representation of a human being in the video frames.

21. (New) The article of claim 7, wherein

the estimating the road boundaries of the 3D scene comprises filling a uniform color region starting from a foot of a position of an object of the objects and stopping when an edge pixel of the background image is reached.

22. (New) The system of claim 13, wherein the objects comprise a representation of a human being in the video frames.

23. (New) The system of claim 13, wherein the estimating the road boundaries of the 3D scene comprises filling a uniform color region starting from a foot of a position of an object of the objects and stopping when an edge pixel of the background image is reached.